**Postal Regulatory Commission**
**Submitted 6/1/2018 4:07:12 PM**
**Filing ID: 105060**
**Accepted 6/1/2018**

BEFORE THE
POSTAL REGULATORY COMMISSION
WASHINGTON, D.C. 20268–0001

| PERIODIC REPORTING<br>(PROPOSAL THREE) | Docket No. RM2018-6 |
|---|---|

# PETITION OF THE UNITED STATES POSTAL SERVICE FOR THE INITIATION OF A PROCEEDING TO CONSIDER PROPOSED CHANGES IN ANALYTICAL PRINCIPLES (PROPOSAL THREE)
(June 1, 2018)

Pursuant to 39 C.F.R. § 3050.11, the Postal Service requests that the Commission initiate a rulemaking proceeding to consider a proposal to change analytical principles relating to the Postal Service's periodic reports. The proposal, relating to incremental costing procedures identified in the FY 2017 ACD as appropriate for further review, is labeled Proposal Three and is discussed in detail in the attached text.

Respectfully submitted,

UNITED STATES POSTAL SERVICE

By its attorneys:

Nabeel R. Cheema
Chief Counsel, Pricing & Product Support

Eric P. Koetting

475 L'Enfant Plaza, S.W.
Washington, D.C. 20260-1137
(202) 277-6333
eric.p.koetting@usps.gov
June 1, 2018

**Proposal Three**

# PROPOSED INCREMENTAL COST ESTIMATION PROCEDURES

## OBJECTIVE:

In accordance with the FY 2017 Annual Compliance Determination (ACD), this proposal seeks review of two incremental costing procedures employed by the Postal Service in the preparation of the FY 2017 Annual Compliance Report (ACR). The first procedure is estimation of an incremental cost for the group of all competitive products in the aggregate, replacing an earlier hybrid approach that relied instead on separate estimates for domestic and international competitive products. The second procedure involves use of a cost driver approximation for mail products (generally NSA products) for which cost driver data at the cost pool level are not available. The Postal Service seeks approval to employ these procedures again in the FY 2018 ACR, and in future ACRs.

## BACKGROUND:

Commission Order Nos. 3506 (September 9, 2016) and 3641 (December 1, 2016) expanded the definition of attributable costs to include a new component: inframarginal costs estimated as part of incremental costs. Previously, incremental costs had been estimated for competitive products as a group to be used for purposes of the cross-subsidy test required by section 3633(a)(1) of title 39. But in the years since they were submitted as part of omnibus rate cases in the pre-PAEA era, incremental cost estimates for individual competitive products, or for any market dominant products, had not been provided. Following issuance of Order Nos. 3506 and 3641, the Postal Service in the FY 2016 ACR presented estimates of incremental costs

for most products (both market dominant and competitive), but was unable in the limited time available to fully incorporate the results of those estimates into the comprehensive FY 2016 Cost and Revenue Analysis (CRA) Report.

In the FY 2016 ACD (March 28, 2017), the Commission used the product-level incremental costs estimated by the Postal Service in the FY 2016 ACR to evaluate cost coverage compliance for both market dominant and competitive products. FY 2016 ACD at 8. The Commission also encouraged the Postal Service to seek to improve its ability to disaggregate international mail cost data between market dominant and competitive products for purposes of estimating incremental costs. *Id.* at 65.

In the FY 2017 ACR, the Postal Service was able to incorporate the expanded definition of attributable costs emanating from Order No. 3641 into the CRA, using procedures that had not been developed when the FY 2016 ACR was prepared. As a result, inframarginal cost estimates were presented for the first time in the FY 2017 ACR for both individual NSA products and, correspondingly, for the non-NSA portions of product types that include NSAs.[1]

Additionally, along the lines explicitly suggested in the FY 2016 ACD, the Postal Service was able to improve the separation of international cost data between market dominant and competitive international mail products. This improvement allowed the estimation both of incremental costs of international market dominant mail and

[1] For example, within the Priority Mail product type, inframarginal costs were estimated for individual Priority Mail NSAs, and for the residual Priority Mail product consisting of all non-NSA pieces that pay the published Priority Mail rates of general applicability. The procedures employed to generate these estimates were discussed on page 4-5 of the FY 2017 ACR text, on pages 3 and 5 of the Preface to USPS-FY17-43, and in the Appendix to the Preface to USPS-FY17-43. The actual calculations were presented in USPS-FY17-43 for market dominant products, and in USPS-FY17-NP10 and USPS-FY17-NP27 for competitive products.

competitive mail separately, and of incremental costs of all competitive mail (both domestic and international).[2] The latter estimate (of the incremental costs of all competitive products in the aggregate) was used for purposes of the cross-subsidy test required by section 3633(a)(1). As explained in the FY 2017 ACR materials cited, the unified estimate of incremental costs for all competitive products replaced the previous "hybrid" estimate consisting of the incremental costs for all domestic competitive products, plus the volume variable and product specific costs for international competitive products. The "hybrid" approach dated back to Proposal 22, Docket No. RM2010-4 (approved by the Commission on January 27, 2010 in Order No. 399).

The Commission posed no inquiries regarding either of these two incremental cost estimation procedures over the course of the FY 2017 ACR process, and applied the results of both procedures for purposes of making findings in the FY 2017 ACD. Specifically, the Commission "provisionally accepted" the resulting inframarginal cost estimates reflected within the attributable costs for domestic NSA products (FY 2017 ACD at 11), and also accepted the incremental cost estimate for all competitive products in the aggregate for purposes of the cross-subsidy test (*id.* at 82). Nonetheless, the Commission determined that, prior to application in future ACRs, each of these procedures should be reviewed under section 3050.11 of the Commission's rules (*id.* at 11, 82). The instant petition is intended to achieve that purpose.

[2] These improvements were discussed at page 4-5 and 66-68 of the FY 2017 ACR text, pages 1-3 of the Preface to USP-FY17-43, and pages 1-2 of the Preface to USPS-FY17-NP10 (although the substance of the NP10 text essentially mirrored the corresponding discussions in the public documents). Actual calculations were presented in USPS-FY17-NP10.

**PROPOSAL:**

As noted, the proposal encompasses two procedures. Both are aspects of the overall matter of incremental cost estimation, and in that sense are sufficiently closely related to warrant simultaneous consideration. But the two procedures are also distinct enough to be evaluated independently.

**Procedure One: Incremental Costs for All Competitive Products**

This procedure specifically relates to the incremental costs for competitive products in the aggregate, which have historically been used for purposes of the cross-subsidy test. In past ACRs, the Postal Service presented what was termed a "hybrid" estimate of incremental costs, in which an estimate of the aggregate incremental costs of domestic competitive products (including group specific costs) was added to an estimate of the volume variable plus product specific costs of international competitive products. The "hybrid" characterization reflected the blending of an actual estimate of domestic incremental costs with a volume variable plus product specific cost proxy for international incremental costs.

The "hybrid" methodology was developed in Proposal 22, Docket No. RM2010-4 (approved by the Commission on January 27, 2010 in Order No. 399). As indicated in Proposal 22, the calculation of incremental costs, including any group specific costs, is based on the methodology presented by witness Bradley and implemented by witness

Kay in Docket No. R2000-1.[3] The methodology was successfully implemented in subsequent rate cases as well, such as Docket No. R2001-1 and Docket No. R2005-1.[4]

As indicated in Proposal 22, this methodology builds up from cost estimates developed at the cost pool level, and thus can only be applied directly to products for which product-specific data are available at the cost pool level. Proposal 22 (October 23, 2009) at 2-3. Proposal 22 noted that cost pool information is not available for international products (*id.* at 3-4), and therefore the methodology has historically been applied only to domestic products.

The need for the hybrid approach stemmed from the structure of the ICRA, which precluded direct application of the incremental cost model to international products. As demonstrated in Proposal 22, Docket No. RM2010-4, the hybrid estimate was an improvement over the full proxy of volume variable plus product specific costs for both domestic and international competitive products, plus group specific costs, used before FY 2009. The hybrid approach provided stronger protection against cross-subsidy than the previous full proxy approach.

For FY 2017, however, additional improvements have strengthened the protection even further by allowing direct estimation of the incremental costs for the group of all competitive products (domestic and international). Although the structure of the ICRA and the complexity of the international classification structure still preclude estimation of incremental costs for individual international competitive products, in

---

[3] See, Direct Testimony of Michael D. Bradley on Behalf of the United States Postal Service, Docket No. R2000-1, USPS-T-22; and Direct Testimony of Nancy R. Kay on Behalf the United States Postal Service, Docket No. R2000-1,USPS-T-23.

[4] See Direct Testimony of Nancy R. Kay on Behalf the United States Postal Service, Docket No. R2001-1, USPS-T-21 and Direct Testimony of Nancy R. Kay on Behalf the United States Postal Service, Docket No. R2005-1, USPS-T-18.

accordance with a suggestion made by the Commission in the FY 2016 ACD, efforts were successful to split international cost information within cost pools between market dominant and competitive products.

The changes that allowed these improvements came in connection with the approval of Proposal Two in Docket No. RM2016-10.[5] Prior to implementation of that proposal, there was insufficient costpool detail to calculate incremental cost for International products. Proposal Two aligned the methodology for city carrier costing in the ICRA with the CRA. This, in turn, also had the collateral benefit of providing the costpool detail needed to calculate incremental cost using the established methodology. The complexity of crosswalking costs for the international mail classes developed in USPS-FY17-NP4 with the costs for the final international product groupings reported in the CRA Report (as filed in USPS-FY17-NP11) still precludes calculating incremental cost for individual international products, but availability of the Proposal Two data does allow for calculating incremental cost at higher levels of aggregation.

Having the ability to make the split between competitive and market dominant international cost data as suggested by the Commission in the FY 2016 ACD had two effects with respect to the FY 2017 ACR. First, it allowed an estimate of the actual incremental costs of international competitive mail, commensurate with the estimate provided in previous years for domestic competitive mail. This alone constituted a clear improvement over past practice, in which the volume variable and products specific costs of competitive International mail were used as a proxy for the incremental costs of that subset of competitive mail products. But, secondly, as noted above, it also allowed

[5] *See* Order No. 3621 (November 17, 2016).

the incremental cost model to directly estimate the costs of producing *all* competitive products simultaneously, and thus provide exactly the information needed to fully conduct the cross-subsidy test as intended. No longer was it necessary to sum separate estimates of domestic and international competitive incremental costs, which, as has been frequently noted, in virtually all circumstances is likely to understate the combined incremental costs.

In preparing the FY 2017 ACR, the Postal Service wished to rely upon the best available information regarding the incremental costs of all competitive mail for purposes of the cross-subsidy test. For the reasons explained above, that required replacing the previous hybrid approach with the improved approach consistent with the Commission's suggestion in the FY 2016 ACD. With this proposal, the Postal Service seeks to continue that practice in future years.

The impact associated with the replacement of the previous hybrid methodology by the improved new methodology is fairly transparent from the FY 2017 ACR. Applying the old hybrid approach in FY 2017 would have resulted in an aggregate competitive product incremental costs of the sum of the aggregate domestic incremental costs shown on page 68 of the FY 2017 ACR text ($12.806 billion) plus the total volume variable and product specific costs for international competitive ($1.053 billion), which is displayed in the Attributable column on page 3 of the Public CRA (USPS-FY17-1). That sum, $13.859 billion (= 12.806 + 1.053), can be compared with the results of the new direct incremental cost calculation for all competitive products as a group, also shown on page 68 of the FY 2017 ACR, $13.884 billion. While the impact is thus fairly small in

percentage terms, approximately two-tenths of one percent, the amount in absolute terms, $25 million, is not necessarily negligible.

**Procedure Two: Using a Proxy Cost Driver to Calculate the Incremental Costs for NSA Products**

The second incremental cost procedure used by the Postal Service in the FY 17 ACR for which the ACD identified a need for further review was the methodology used to estimate inframarginal costs for products for which data at the cost pool level are lacking. That procedure was described in the Appendix to the Preface to USPS-FY17-43, and was applied primarily (but not exclusively) to NSA products

Since implementation of the PAEA classification regime, the Commission treats each NSA as a separate product. See, e.g., Docket No. RM2007-1, Order No. 25 (August 15, 2007) at 56, 82; Order No. 43 (October 29, 2007) at 99. This treatment, in conjunction with the new expanded definition of attributable costs promulgated in Order Nos. 3506 and 3641 (incorporating the inframarginal costs estimated as part of the incremental costs of each product), now requires the Postal Service to calculate the incremental cost for each NSA product. In calculating those NSA incremental costs, two issues arise. First, some NSA products have extremely small volumes, creating practical issues associated with calculating their incremental costs and, second, the Postal Services data systems do not provide, at sufficient level of detail, the data required for calculating NSA incremental costs. Both of these issues are addressed herein.

Implications of Extremely Small Volume NSAs

In an activity or cost pool characterized by increasing returns to scale and/or increasing returns to density, the marginal cost of the next unit will be lower than the

marginal cost of the current unit. In other words, marginal cost falls with volume increases. In this circumstance, a product's incremental cost in that activity or cost pool will exceed its volume variable cost. A product's volume variable cost is found by multiplying each unit of the product by the current marginal cost of all products, but a product's incremental cost is found multiplying each unit of the product by its own marginal cost. Because some of the units have higher marginal costs, the incremental cost will exceed the volume variable cost. However, when a product has a very small volume relative to the other products handled in the activity or cost pool, the product's volume variable cost and incremental cost will virtually be the same. This is because the range of volume over which the product's various marginal costs are calculated is so small that there is no appreciable change in the marginal costs.

This point can be demonstrated with a simple numerical example. Note that all necessary information for calculating incremental cost is available in this example, so there are not approximation issues. The calculations of incremental costs are exact.

The example features a single cost pool with at total accrued cost ($C_j$) of $14,953.70 in which cost are generated by a constant elasticity cost function with an elasticity ($\varepsilon_j$) equal to 0.65. There are seven different products that make use of this cost pool, so the pool's cost driver ($D_j$ has seven different subcomponents. The cost function is given by:

$$C_j = \alpha_j \left( \sum_{i=1}^{7} D_{ji} \right)^{\varepsilon_j}$$

Where $\alpha_j$ converts the cost driver used into dollars. There is a non-NSA product and six NSA products in the cost pool, and the proportions of the cost driver used by each product are given in the following table:

| Product | Driver Amount | Driver Share |
|---|---|---|
| Non NSA | 40,000 | 52.22% |
| NSA 1 | 20,000 | 26.11% |
| NSA 2 | 10,000 | 13.05% |
| NSA 3 | 5,000 | 6.53% |
| NSA 4 | 1,000 | 1.31% |
| NSA 5 | 500 | 0.65% |
| NSA 6 | 100 | 0.13% |
| Total | 76,600 | 100% |

The non-NSA product consumers over half the driver and NSA products 5 through 6 have such small volumes that the each consumer less than one percent of the cost driver. Each product's volume variable can be calculated with the now familiar formula:

$$VVC_{ji} = \varepsilon_j C_j \left(\frac{D_{ji}}{D_j}\right).$$

Similarly, each product's incremental cost can be calculated with the computational version of the incremental cost formula:

$$IC_{ji} = \varepsilon_j C_j \left[\left(1 - \frac{D_{ji}}{D_j}\right)^{\epsilon_j}\right].$$

The next table presents the volume variable and incremental costs for each of the six NSA products and the non-NSA product.

| Product | Volume Variable Cost | Incremental Cost | Infra Marginal Cost |
|---|---|---|---|
| Non NSA | $5,075.67 | $5,701.12 | $625.46 |
| NSA 1 | $2,537.83 | $2,669.96 | $132.13 |
| NSA 2 | $1,268.92 | $1,299.75 | $30.84 |
| NSA 3 | $634.46 | $641.93 | $7.47 |
| NSA 4 | $126.89 | $127.18 | $0.29 |
| NSA 5 | $63.45 | $63.52 | $0.07 |
| NSA 6 | $12.69 | $12.69 | $0.003 |

The example shows that even with exact calculation of incremental costs, there can be instances in which there is no appreciable difference between a product's volume variable cost and its incremental cost. This occurs when the product's volume is so small that it makes use of a very small amount of a cost driver. This exact situation occurs for some NSA products. In the simple example presented here, there is no resource cost associated with calculating the incremental costs for the extremely small volume NSA product, but for actual Postal Service NSA products, the resource cost can be material. Thus, in those instances in which there was no practical difference between an NSA product's volume variable cost and incremental cost, the Postal Service will save those resources by not calculating those incremental costs.

When preparing the FY 2017 ACR, tests were run on the top NSA's by volume variable cost for each product type (using the approximation method described below) to determine at which point where there was no practical difference between an NSA product's volume variable cost and incremental cost. These tests suggested two thresholds below which individual NSA have no appreciable inframarginal costs: NSAs with less than 0.3 percent of the product type's volume variable cost, and NSAs with less than $8 million in volume variable cost. In FY 2107, only 32 NSAs out of a total of

489 domestic competitive NSAs were above one or both of these thresholds. [6] Incremental costs were calculated for a minimum of five NSAs for each product type, however, even if some of the top five NSAs fell below both thresholds, to verify that no NSA within these product types with a material amount of inframarginal costs had been missed.

In sum, the calculation of incremental costs for the hundreds of domestic NSA's with minimal volumes would require a material amount of scarce Postal Service resources, and the resulting incremental cost estimates for those products would not be practically different from their volume variable costs. The nature of the calculation makes it a foregone conclusion that, when moving down the list of NSAs with smaller and smaller volume variable cost shares, the estimated inframarginal cost are only going to move closer and closer to zero. Once the point has been reached on the list where the estimated inframarginal costs already round to zero, further explicit calculations are pointless. Consequently, the Postal Service, and the Commission, are better served when the Postal Service expends those resources on other, critical, costing issues.

Implications of Missing Information

As explained by Professor Bradley on pages 30-31 of his testimony in Docket No. R2000-1 (USPS-T-22, January 12, 2000), a key input for calculating the incremental costs of a particular product in any specified cost pool is the proportion of the cost driver caused by that product. If, for example, the Postal Service's data collection systems indicate that First-Class Mail presort letters constitute 35 percent of the cost driver in a

[6] All PMNPR is counted as one contract for purposes of the incremental cost calculations.

particular cost pool, than that proportion is used to calculate the incremental cost of First-Class Mail presort letters in that cost pool.

Yet the Postal Service's data systems cannot distinguish, at the cost pool level, between individual mail pieces entered under an NSA and individual pieces not entered under an NSA. It is not possible therefore to generate the required cost driver proportions for specific NSA products (or, for that matter, for a residual non-NSA product). Under our hypothetical example, the data systems will indicate that 35 percent of the cost driver relates to First-Class Mail presort letters in total, but do not break out that 35 percent between the proportions related to specific NSAs, or the proportion relating to the volume not entered pursuant to any NSA. Thus, as explained on pages 6-7 of the ACR for FY 2016, attempting to estimate incremental costs for product groupings or "product types" that consist partially or entirely of NSA products presents a substantial challenge.

In order to best estimate the incremental costs for individual NSA products, the approximation used for the missing driver ratios should reflect the characteristics of the missing information as well as possible. To make that determination when selecting an approximation, it is essential to have an understanding of exactly how the NSA driver ratios are used in calculating incremental cost.

For example, consider the calculation of the incremental cost for the hypothetical Priority Mail NSA product number 50 ($IC_{PM50}$).[7] Applying the traditional incremental cost formula to this product yields:

[7] The previous example involved First-Class Mail presort letters, while this example involves to Priority Mail. This shift was made to demonstrate that the approximation issue applies to any set of NSAs, either market dominant or competitive.

$$IC_{PM50} = \sum_{i}^{n} \alpha_i D_i^{\varepsilon_i} - \sum_{i}^{n} \alpha_i \left(D_i - D_{i,PM50}\right)^{\varepsilon_i}.$$

In this equation, Di is the amount of the cost driver in the ith cost component, $D_{i,PM50}$ is the amount of the cost driver caused by Priority Mail NSA product 50, $\varepsilon_i$ variability for that component and $\alpha_i$ converts the driver amount to cost. The computationally convenient version of this equation is:

$$IC_{PM50} = \sum_{i}^{n} \alpha_i D_i^{\varepsilon_i} \left[1 - \left(1 - \frac{D_{i,PM50}}{D_i}\right)^{\varepsilon_i}\right].$$

Because $D_{i,PM50}$ is not available, the amount of the ratio in the formula must be approximated. However, as discussed above, the Postal Service's data systems provide the amount of the driver consumed by the product grouping or "product type." Applying this information potentially narrows the scope of uncertainty about the amount of the driver associated with each NSA product.

To see why this is so, return to the hypothetical Priority Mail example. The proportion of the driver dedicated to each product group, like Priority Mail, $\left(\frac{D_{i,PM}}{D_i}\right)$, is known, so the amount of uncertainty can be narrowed to the proportion of the known Priority Mail driver that is made up of NSA product 50. That allows use to re-write the formula as:

$$IC_{PM50} = \sum_{i}^{n} \alpha_i D_i^{\varepsilon_i} \left[1 - \left(1 - \left(\frac{D_{i,PM}}{D_i}\right)\left(\frac{D_{i,PM50}}{D_{i,PM}}\right)\right)^{\varepsilon_i}\right]$$

Moreover, the Postal Service externally calculates the volume variable cost for each NSA product, reflecting the specific cost-causing characteristics of the product. The calculated volume variable costs for NSA products embody, and thus reflect, the amounts of the driver used by the product.

This is useful information because variations in volume variable costs for the products within the group will occur because of variations in the amount of the driver used. In the incremental cost formulation, the volume variable cost for the NSA product in the ith cost component is defined as:

$$VVC_{i,PM50} = \varepsilon_i \alpha_i D_i^{\varepsilon_i} \left(\frac{D_{i,PM50}}{D_i}\right).$$

This is consistent with the volume variable cost for the overall product group or type:

$$VVC_{i,PM} = \varepsilon_i \alpha_i D_i^{\varepsilon_i} \left(\frac{D_{i,PM}}{D_i}\right).$$

These two formulas produce the ratio of the volume variable costs for the NSA product to overall Priority Mail volume variable cost:

$$\frac{VVC_{i,PM50}}{VVC_{i.PM}} = \frac{\varepsilon_i \alpha_i D_i^{\varepsilon_i} \left(\frac{D_{i,PM50}}{D_i}\right)}{\varepsilon_i \alpha_i D_i^{\varepsilon_i} \left(\frac{D_{i,PM}}{D_{i,PM}}\right)} = \frac{D_{i,PM50}}{D_{i,PM}}.$$

This ratio shows that the differences in volume variable costs for the NSA products within a cost component arise because of differences in the amount of the driver consumed. Thus, if the amount of volume variable cost, by cost pool, for each NSA product were available, no approximation would be needed. Unfortunately, the method of calculating volume variable costs for NSA products does not require computing the amount of volume variable cost per NSA product in specific cost pools. Rather the

method produces the total volume variable cost for the NSA-product, which is calculated outside the CRA. Thus, the best approximation available arises from using the overall ratio of NSA-product volume variable cost to product-group volume variable cost within each cost pool.[8] That ratio can be expressed mathematically as:[9]

$$\frac{VVC_{PM50}}{VVC_{PM}} = \frac{\sum_i^n \varepsilon_i \alpha_i D_i^{\varepsilon_i} \left(\frac{D_{i,PM50}}{D_i}\right)}{\sum_1^n \varepsilon_i \alpha_i D_i^{\varepsilon_i} \left(\frac{D_{i,PM}}{D_i}\right)} = \psi_{PM50}.$$

Because of its additive nature, this formula does not lend itself to simplification, as do the component-specific ratios. The approximation to be applied in calculating NSA products' incremental costs is that the overall ratio of an NSA product's volume variable cost to the overall product type's volume variable cost is applicable to all cost components. Under this assumption, the NSA product's incremental cost can be a calculated according to the following formula:

$$IC_{PM50} = \sum_i^n \alpha_i D_i^{\varepsilon_i} \left[1 - \left(1 - \left(\frac{D_{i,PM}}{D_i}\right)\psi_{PM50}\right)^{\varepsilon_i}\right].$$

[8] An advantage of conducting this calculation separately for each cost pool is that it accounts for the actual variations across cost pools in the proportions of the cost driver associated with each product type. Thus, in a cost pool in which the broader product type constitutes a relatively larger share of the overall cost driver, the cost driver approximation for each NSA will be relatively larger. Conversely, in cost pools in which the product type constitutes a relatively smaller share, the approximation for each NSA will likewise be relatively smaller. This is exactly the pattern expected if the actual NSA product cost driver shares were available.

[9] The individual component costs for $VVC_{PM50}$ are not calculated in the NSA costing method. Thus, the numerator in this expression cannot be disaggregated.

Computationally, this approximation is implemented by calculating the ratio of each NSA product's volume variable cost (as externally determined) to the total volume variable cost for the product group.[10]

It is important not to misconstrue the nature of the approximation being employed. While this approximation does make use of relative volume variable costs, it is not depending upon relative volume variable costs to provide a causal path for calculating product costs. Rather, it is using the volume variable cost ratio as a proxy for the unknown true variable, the ratio of the cost drivers. More specifically, this approximation is not used to allocate a pre-calculated amount of infra-marginal cost (e.g., based on the group incremental costs of the overall "product type") among the component products of that "product type."[11] Instead, the approximation is used to estimate the required cost driver ratio, which is then used in the appropriate incremental cost formula. The causal linkage to calculating incremental cost is applied for NSA products just as it is applied for all other products.

Naturally, the calculated incremental costs, whether using the actual cost driver ratios or the proposed approximation will depend upon the relative proportion of the overall "product type driver" consumed by the individual NSA mail product. For example, with respect to the three USPS Marketing Mail product types that included

---

[10] To give a concrete (but totally hypothetical) example, suppose Priority Mail NSA product number 50 generates 6 percent of the overall volume variable cost of the Priority Mail "product type." Then, if Priority Mail (hypothetically) represents 10 percent of the cost driver for a given cost pool, the amount of the cost driver consumed by the NSA product 50 in that cost pool is just 0.06 * 0.10 = 0.006, or 0.6 percent of the total cost driver. As might be imagined, this would result in a relatively small estimate of inframarginal costs for this particular NSA product in this cost pool.

[11] An allocation exercise of this variety was suggested by UPS in the FY 2016 ACR proceeding. *See* Initial Comments of UPS, Docket No. ACR2016 (February 2, 2017) at 14-15.

NSA volumes in FY 2017, the NSA portions were quite small. Therefore, the inframarginal costs estimated in USPS-FY17-43 for the NSA products were likewise relatively small.[12] In contrast, the non-NSA portions constituted the vast majority of these USPS Marketing Mail "product types", so the non-NSA portion had relatively large inframarginal costs.

The situation is somewhat different, however, for a "product type" in which NSA mail constitutes a sizeable portion of total volume. For most of the domestic mail competitive "product types," NSA mail represents a healthy fraction of the overall total.[13] This distinction has several potential consequences. First, unlike the situation with respect to the USPS Marketing Mail examples, the cost driver portion associated with the non-NSA volume may be relatively small, leading to a relatively small amount of inframarginal cost caused by the non-NSA part of the product type. Second, although the NSA portion of the cost driver may be sizable in the aggregate, individual NSAs may or may not have any material portion of that aggregate. A "product type" that includes scores, or even hundreds of NSAs, could lead to situation in which each individual NSA product volume and driver consumption is too small to constitute a meaningful share of the cost driver. In those instances, the driver proportion is very small, the inframarginal costs are very small and there would therefore be no meaningful difference between the

[12] For an analysis of the impact of changes in the driver proportion on calculated incremental costs, see Direct Testimony of Michael D. Bradley on Behalf of the United States Postal Service, USPS-T-22, Docket No. R2000-1, January 12, 2000 at 32.
[13] To be clear, as may be gleaned from the FY2017 Public-Nonpublic Crosswalk Table presented as part of Attachment Two to the FY 2017 ACR, the "product types" in question are Domestic Priority Mail Express, First-Class Package Service, Domestic Priority Mail, Parcel Select Mail, and Parcel Return Service Mail, all of which have an NSA component (or, in the case of Parcel Return Service, consist entirely of NSA mail).

NSA product's volume variable costs and its incremental costs.[14] Because inframarginal costs are the difference between incremental and volume variable costs, these small NSA products have virtually no inframarginal cost associated with them.[15]

When there are many individual NSA products in a product type, the sum of the incremental costs for the individual product will be less, and perhaps materially less, than the incremental cost estimated for the product type as a whole. This outcome is the result of the Commission determination to treat each NSA as a separate product and has nothing to do with the proposed approximation. The identical result would hold if all required information were available.

In the FY 2017 ACR, the approximation discussed here was applied to all "product types" with NSA components to generate the inframarginal cost estimates necessary to calculate product attributable costs. For market dominant mail, the only three "product types" were the three USPS Marketing Mail products in which NSA volume was entered in FY 2017. The inframarginal costs for those were presented in file FY17Public.ICSummaryReport_MD_NSA_NP.xlsx of USPS-FY17-43 and, for the NSA components, were then input into the domestic NSA folder, USPS-FY17-30. The

[14] As described in the previous section, in attempting (within the severe time constrains of the ACR production process) to provide meaningful estimates of inframarginal costs for products within "product types" that include numerous NSAs, the following procedure was applied in the FY 2017 ACR, and is proposed to continue to be applied going forward. Approximate cost driver shares for each individual NSA product within the "product type" are calculated and then sorted from largest to smallest share. Starting with the largest shares, incremental costs are estimated sequentially and the results reviewed. Eventually the incremental costs for an NSA product are no longer materially different from that product's volume variable costs. At this point the process is stopped because inframarginal costs for any smaller products are effectively zero.

[15] In those instances in which there is no meaningful inframarginal cost estimate, the reported attributable costs of those particular NSA products will simply be equal to the estimated volume variable costs of the product (in addition to product specific costs, if any).

estimates for the non-NSA component were input into the Public CRA Report in USPS-FY17-1. For competitive mail "product types," the inframarginal costs for NSA products were estimated in USPS-FY17-NP27, and the attributable cost calculation for each NSA was done in that folder as well. The inframarginal costs for the residual non-NSA component of each "product type" were estimated in USPS-FY17-NP10, and were then input into the Nonpublic CRA Report (USPS-FY17-NP11). Similarly, the inframarginal costs associated with market dominant and competitive Post Office Boxes were estimated in USPS-FY17-NP10 using the approximation method and were reflected in the respective Public and Nonpublic CRA Reports.

The impacts associated with the Procedure Two cost driver approximation methodology are less clear cut than the impact of the new Procedure One (the methodology for calculating incremental costs for the group of competitive products), because there is no intuitive baseline against which to compare Procedure Two results. In theory, the logical baseline would be actual inframarginal costs calculated using actual data at the cost pool level. But since the very reason we must rely on the approximation is because such actual data at that level do not exist, that theoretical baseline does not exist either. On the other hand, assuming that *no* inframarginal costs estimates would be available without some type of approximation methodology, one could assess the impact of this methodology against the baseline of zero inframarginal costs in all instances in which product data at the cost level are not available. In that sense, the inframarginal costs estimated for those products in the FY 2017 ACR using the approximation method implicitly reflect the impact of Procedure Two, at least in terms of FY 2017.